SECTION 09 69 00
ACCESS FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Access flooring shall consist of a series of modular, removable, interchangeable panels on an elevated support system forming an accessible underfloor cavity to accommodate electrical and mechanical services. System shall be cast panels on adjustable height pedestal assemblies.

1.2 RELATED WORK

A. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS for additional LEED requirements.
B. Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS for VOC limit.
C. Floor Finishes: Refer to Section 09 06 00, SCHEDULE FOR FINISHES.
D. Underfloor Fire Suppression System: Refer to Mechanical Contract documents.
E. Connection of access flooring systems to building ground: Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS / Section 27 05 26, GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS / Section 28 05 26, GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY.
F. Electrical distribution components: Refer to Electrical Contract documents.

1.3 DESIGN CRITERIA

A. Structural Performance per CISCA A/F: Provide access flooring systems capable of withstanding the following loads and stresses within limits and under conditions indicated, as determined by testing manufacturer's current standard products according to referenced procedures in CISCA A/F, "Recommended Test Procedures for Access Floors":
   1. Ultimate-Load Performance: Provide access flooring systems capable of withstanding a minimum ultimate concentrated load equal to value obtained by multiplying specified concentrated floor panel design load by a factor of 2.5, without failing, according to CISCA A/F, Section II, "Ultimate Loading." Failure is defined as the point at which access flooring system will not take any additional load
   2. Rolling-Load Performance: Provide access flooring systems capable of withstanding rolling loads of the following magnitude applied to non-perforated panels, with a combination of local and overall deformation not to exceed 1.02 mm (0.040 inch) after exposure to rolling load over CISCA A/F Path A or B, whichever path produces the

greatest top-surface deformation, according to CISCA A/F, Section III, "Rolling Loads."

a. CISCA A/F Wheel 1 Rolling Load: 3559 N (800 lbf).

b. CISCA A/F Wheel 2 Rolling Load: 2669 N (600 lbf).

B. Pedestal Assembly:

1. Pedestal Axial-Load Performance: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding a 22. kN (5000 lbf) axial load per pedestal, according to CISCA A/F, Section V, "Pedestal Axial Load Test."
2. Pedestal Overturning-Moment Performance: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding an overturning moment per pedestal of 113 N x meters (1000 lbf x inches), according to CISCA A/F, Section VI, "Pedestal Overturning Moment Test."
3. Provide a means of leveling and locking the assembly at a selected height which requires deliberate action to change height setting and which prevents vibrating displacement.
4. Height between the finish floor and underside of panel:
   a. Not less than size indicated on Drawings.

C. Panels:

1. All panels shall be interchangeable except those altered to meet special conditions.
2. Concentrated-Load Performance: Provide floor panels, including those with cutouts, capable of withstanding a concentrated design load of the following magnitude, with a top-surface deflection under load and a permanent set not to exceed, respectively, 2.03 and 0.25 mm (0.080 inch and 0.010 inch), according to CISCA A/F, Section I, Concentrated Loads."
   a. 4448 N (1000 lbf).
3. Floor Panel Impact-Load Performance: Provide access flooring system capable of withstanding an impact load of 445 N (100 lbf) when dropped from 914 mm (36 inches) onto a 6.5-sq. cm (1-sq. in.) area located anywhere on panel, without failing. Failure is defined as collapse of access flooring system.

D. Installed access floor shall be level within plus or minus 1 in 2000 (0.060 inches in 10 feet), and plus or minus 2.5 mm (0.10 inches) over the entire area. Floor assembly to be rigid, free of vibration, rocking panels, rattles and squeaks.

E. Leakage: Air leakage through the joints between panels and around the perimeter of the floor system not to exceed .057m^3 (two cubic feet) of

air per minute per linear 300 mm (foot) of joint subjected to 125 Pa (0.5 inch, water gage) positive pressure in the plenum.

F. Grounding: Components shall be in direct positive contact for safe continuous electrical grounding of the entire floor system.
   1. Panel to Understructure Resistance: Not more than 10 ohms.

G. Earthquake Load Performance: Provide access flooring capable of withstanding a lateral seismic force (Fp) in seismic zone applicable to this Project, according to requirements of ICC 2006.

H. Flame Spread Rating: Provide assembly flame spread of 25 or less using ASTM E-84 test method.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Samples: Full sized floor panel and each understructure component.

C. Shop Drawings:
   1. Floor panel layout, including railing, step and ramp location.
   2. Detail components of assembly, anchoring methods and edge details, including cut-out details, method of grounding.

D. Manufacturers' Literature and Data: Access floor.

E. Manufacturers' Certificates: Flame spread rating.

F. Floor System Test Reports: Submit certified test reports, from a testing laboratory satisfactory to the Government, attesting that the floor system proposed for installation meets all specified requirements. Submit test reports with shop drawings.

G. LEED Submittals:
   1. Credits MR 4.1 & 4.2: For products having recycled content, documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.
      a. Include statement indicating costs for each product containing recycled content.
   2. Credits MR 5.1 & 5.2: For products manufactured within 500 miles of project site *and* whose raw materials are extracted, harvested or recovered, within 500 miles of the project site, documentation indicating the location and distance of material manufacturer and point of extraction, harvest, or recovery for each raw material from the Project site.
      a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
   3. Credit EQ 4.1: Manufacturer’s product data for installation adhesives and sealants applied on site and within the vapor barrier, including printed statement of VOC content (in g/L).

4. Credit EQ 4.3:
   a. Manufacturer's product data for carpet tile, including statement of compliance with CRI Green Label Plus testing and requirements.
   b. Manufacturer's product data for carpet cushion including statement of compliance with CRI Green Label testing and requirements.
   c. Manufacturer's product data for installation adhesive, including printed statement of VOC content (in g/L).

1.5 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Association of Textile Chemists and Colorists (AATCC):
134-01.....Electrostatic Propensity of Carpets

C. American Society for Testing and Materials (ASTM):
E84-07.....Surface Burning Characteristics of Building Materials

D. National Electrical Manufacturers Association (NEMA):
LD-3.1-05.....Application, Fabrication, and Installation of High-Pressure Decorative Laminates

E. Ceilings and Interior Systems Construction Association (CISCA):
CISCA 2004.....Recommended Test Procedures for Access Floors

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-Of-Design Product: Subject to compliance with requirements, provide Tate Access Floors, Inc.; CC-1000 LOW-LOCK/POSILOCK UNDERSTRUCTURE or a comparable product by one of the following:
   1. ASM Modular Floors Inc.
   2. Computer Environments Inc.
   3. Steel InterfaceAR.
   4. Maxcess Technologies, Inc.

B. LEED Requirements:
   1. Recycled Content of Steel Products: Provide steel products with minimum 25% post-consumer recycled content.
   2. Provide installation adhesives, sealants, paints, and coatings applied on site and within the vapor barrier, that comply with VOC limits outlined in Division 01 Section "Indoor Air Quality Requirements."
   3. Provide carpet that complies with CRI Green Label Plus testing and requirements.
      Provide carpet cushion that complies CRI Green Label testing and requirements.

2.2 FLOOR COVERING

A. Refer to Section 09 06 00, SCHEDULE FOR FINISHES, for floor finish locations and product selections.

2.3 FLOOR PANELS

A. Construct panels to be uniform in face dimensions, within a tolerance of plus or minus 0.38 mm (0.015 inches) of required size and be square within a tolerance of plus or minus 0.38 mm (0.015 inches), and flatness within a tolerance of plus or minus 0.5 mm (0.02 inches). Design individual floor panels to be easily placed and removed, without disturbing adjacent panels or understructure, by one person using a tool furnished by the access floor manufacturer. Panels shall be 600 mm by 600 mm (24 inches by 24 inches) in size.

B. Concrete Panels: Panels shall be a minimum of 25 mm (1 inch) thick, molded from lightweight reinforced high strength concrete. Panel shall be a one-piece unit with a flat solid surface on top. Panel corners shall be radiused and perimeter shall be formed to receive pedestal locking mechanism.

2.4 CUT-OUTS

A. Fabricate cut-outs in floor panels to accommodate cable penetrations and service outlets where shown or specified. Provide reinforcement or additional support to make panels with cut-outs perform the same as solid uncut panels. Fit cut-outs with manufacturer's standard grommet. For cut-outs larger than maximum size grommet, trim edge of cut-outs with plastic trim, molding and/or gaskets having tapered top flange. Provide removable twist close covers for grommets.

1. Provide foam-rubber pads for sealing annular space formed in cutouts by cables and trim edge of cutout with molding having flange and ledge for capturing and supporting pads.

2.5 ACCESSORIES

A. Cavity Dividers: Provide manufacturer's standard metal dividers located where indicated to divide under floor cavities.

B. Vertical Closures (Fascia): Where under floor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal closure plates with factory applied finish.

C. Panel Lifting Device: Manufacturer's standard portable lifting device of type required for lifting panels with floor covering provided. Provide four lifting devices of each type required.

D. Perimeter Support: Where indicated, provide manufacturer's standard method for supporting panel edge and form transition between access flooring and adjoining floor covering at same level as access flooring.

E. Floor Cleaner: Type recommended by the floor covering manufacturer.

2.6 PEDESTALS

A. Provide manufacturer's standard pedestal assembly including base, column with provisions for adjustment, locking device, head and pad.
   1. Base: Provide pedestal base with not less than 100 mm by 100 mm (4 inches by 4 inches) of bearing area.
   2. Column: Hollow shaft of appropriate length fitted with threaded rod and leveling nut.
   3. Provide vibration proof mechanism for making and holding fine adjustments in heights for leveling purposes over a range of not less than 50 mm (2 inches). Include means of locking mechanism at a selected height.
   4. Heads: Heads shall be of a type designed to hold panels in place in a freestanding stringer less understructure.
   5. Pads: Provide sound dampening pad for each pedestal head.
   6. Fabricate units of sufficient height to provide required under floor clearance shown on drawings.

2.7 PEDESTAL BASE ADHESIVE

A. Type recommended by manufacturer.

2.8 RAMPS AND STEPS

A. Bolt ramps and steps to framing. Form step nosing, threshold strip, and floor bevel strip from extruded or cast aluminum, with non-slip traffic surface. Close exposed sides of ramp and step with not thinner than 18 gage aluminum, reinforced on the back to prevent warp. Install ramp shoes to meet main and raised access floor.

B. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1:12, with raised-disc rubber or vinyl floor covering, and of same materials, performance, and construction requirements as access flooring.

C. Steps: Provide steps of size and arrangement indicated with floor covering to match access flooring. Apply non-slip aluminum nosing to treads, unless otherwise indicated.

2.9 RAILING AND POSTS

A. Construct rails and posts from 32 mm (1-1/4 inch) round extruded aluminum tube shapes. Weld all joints and finish to texture of tubing. Flanges may be welded, or bolted to rails and supports.

B. Railings: Standard extruded aluminum railings, at ramps and open sided perimeter of access flooring where indicated. Include handrail, intermediate rails, posts, brackets, end caps, wall returns, wall and floor flanges, plates, and anchorage where required. Provide railings

that comply with structural performance requirements mandated by Local Code.

2.10 FINISHES

A. General: Apply finishes in factory after products are fabricated. Protect finishes on exposed surfaces with protective covering before shipment.

B. Pre-cast Concrete Panels:

1. Exposed face shall be ground smooth and polished.

2.11 FLOOR FINISH

A. Surface panels with specified material in place with a waterproof adhesive to prevent delamination by moving caster loads. Color and material as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

B. Surface ramps with material as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

C. Bolt heads or similar attachments shall not pierce the traffic surface.

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete sealers if used shall be identified and proven to be compatible with pedestal adhesive.

B. Prior to installation, subfloor shall be dry and free of any surface irregularities that could reasonably be anticipated to adversely affect access flooring system appearance or performance.

C. Clear the area in which the floor system is to be installed of debris. Clean floor surfaces and remove dust before the work is started.

3.2 INSTALLATION

A. Layout floor panel installation to keep the number of cut panels at the floor perimeter to a minimum. Scribe panel assemblies at perimeter and around column to provide a close fit with no voids greater than 6 mm (1/4 inch) where panels abut vertical surface.

B. Secure bases of pedestals to the structural subbase with an adhesive or mechanical fasteners in full and firm contact with the subbase. Set pedestals plumb, and in true alignment.

C. Provide auxiliary framing around columns and other permanent construction, at sides of ramps, at free ends of floor, and beneath floor panels that are substantially cut to accommodate utility systems.

D. Construct floor panels to lie flat without warp or twist and bear uniformly on supports without rocking, and without edges projecting above the floor plane. Panels to interlock with supports in a manner that will preclude lateral movement.

E. Provide free ends of floor with positive anchorage and rigid support where floor system does not abut wall or other construction.

F. Cover exposed ends of floor system with aluminum closures. Closures to consist of complete trim and fascia assemblies.

3.3 REPAIR OR WELDED GALVANIZED SURFACES

A. Use galvanized repair compound where galvanized surfaces are scheduled to receive field or shop coatings, and apply in accordance with manufacturers printed instructions.

3.4 CLEANING

A. Remove debris accumulated during installation from beneath the raised floor system. Immediately after completion of the floor installation, apply floor cleaner in accordance with the floor covering manufacturer's instruction. Do not allow any cleaner to remain between individual panels.

3.5 PROTECTION

A. Cover cleaned floors with clean building paper before construction traffic is permitted. Remove protective covering at completion of Work.

3.6 LIFTING DEVICES

A. Provide four floor panel lifting device for each individual floor area.

3.7 EXTRA STOCK

A. Furnish six floor panels and six complete pedestal assemblies and store where directed by the Resident Engineer.

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